

Entomology

1. Introduction, Definition, Concept and Importance

- 1.1 Arthropoda and insecta
- 1.2 Insect abundance, dominance and outbreak
- 1.3 Beneficial aspects
- 1.4 Harmful aspect

2. External Morphology

- 2.1 Integument (cuticle)
- 2.2 Head formation, sutures sclerites
- 2.3 Mouth parts and modification
- 2.4 Antennae and modification
- 2.5 Legs and modification
- 2.6 Wing, venation and modification
- 2.7 Abdomen appendages
- 2.8 Larva and pupa types
- 2.9 Vision and sense organs

3. Internal Anatomy

- 3.1 Digestive system
- 3.2 Circulatory system
- 3.3 Excretory system
- 3.4 Respiratory system
- 3.5 Reproductive system
- 3.6 Nervous system
- 3.7 Insect growth regulators

4. Insect Systematic and Classification

- 4.1 Collection, pinning and preservation
- 4.2 Binomial nomenclature
- 4.3 Phylogeny and classification
- 4.4 Insect Orders and families of Agriculture importance
 - 4.4.1 Apterygote Orders and their families
 - 4.4.2 Exopterygote Orders and their families
 - 4.4.3 Endopterygote Orders and their families

5. Ecological Perspectives

- 5.1 Ecosystem and agro-ecosystem
- 5.2 Abiotic and biotic factors influencing insect populations
- 5.3 Tropic levels and relationships
 - 5.3.1 Intra/inter specific interactions
 - 5.3.2 Herbivores- plant co-evolution
 - 5.3.3 Predator-prey interactions
 - 5.3.4 Plant-pollinator diversity and interactions
- 5.4 Population dynamics
 - 5.4.1 Population theory
 - 5.4.2 Survival and growth curves
 - 5.4.3 Life table
 - 5.4.4 Island biogeography
- 5.5 Insect nutrition-food chain and food webs
- 5.6 Pollution and stream ecology

6. Pest Management

- 6.1 Pest management concept
- 6.2 Economic decision level
- 6.3 Pest control measures
 - 6.3.1 Physical
 - 6.3.2 Mechanical
 - 6.3.3 Cultural
 - 6.3.4 Legislative
 - 6.3.5 Host plant resistance
 - 6.3.6 Natural enemies
 - 6.3.7 Pesticides
 - 6.3.8 Bio-rational (attractants/ repellents/anti- feedants/ hormones/ pheromone)
- 6.4 Pest clinic and Integrated Pest Management (IPM)
- 6.5 Ecological and Organic Pest Management (EOPM)

7. Insect Pests of Crops

- 7.1 Insect pest category and crop loss
 - 7.1.1 Cereal crop pests
 - 7.1.2 Vegetable crop pests
 - 7.1.3 Fruit crop pests
 - 7.1.4 Oilseed crop pests
 - 7.1.5 Pulse crop pests
 - 7.1.6 Industrial/spice crop pests
 - 7.1.7 Stored grain pest
 - 7.1.8 Medical/veterinary pests

8. Industrial Aspects of Insects

- 8.1 Api-culture- beekeeping production and processing
- 8.2 Seri-culture- silkworm rearing, cocoon production and processing
- 8.3 Lac-culture- lac cultivation, harvesting and processing
- 8.4 Entomophagy and entomopathogen
 - 8.4.1 Insects as feed
 - 8.4.2 Insects as food
 - 8.4.3 Beneficial insect rearing and pathogen culture
- 8.5 Use of bioagents (predators, parasitoids and pathogens in crop pest management)